Case studies of TID propagation characteristics using cross-correlation analysis of incoherent scatter radar and DPS-4 ionosonde data

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In the report the case studies of the propagation characteristics of traveling ionospheric disturbances (TID) using cross-correlation analysis of incoherent scatter radar (ISR) and DPS-4 ionosonde data are presented. The distinctive property of the Irkutsk ISR implies that it make possible the irrelative electron density measurements without an ionosonde calibration. DPS-4 is located right in Irkutsk, ISR is 98 km northwest of Irkutsk. The Irkutsk ISR has a possibility for scanning in the meridional plane. For the analyses we used the height electron density profile obtained with the DPS-4 and profiles obtained with the ISR from two antenna beams. As a result of measurements the horizontal distances between the observing points were of the order of 100 km. TIDs of different scales were selected from electron density diurnal variation by band-pass filtering. The cross-correlation analysis allows the calculation of the delays between the TIDs observed at the different points. The set of delays is used for the determination of the TID propagation characteristics on the assumption that TID has the form of a planar wave. The measurements at different heights provide a way of TID height structure study. In the report the analysis results for TIDs observed during September 2005, World Day Campaign are presented.